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ABSTRACT

The linguistic state-of-the-art relevant to the construction of a battery of tests intended to yield language proficiency profiles of preschool children is surveyed in this paper. A basic assumption is that language data can be structured with a model that reflects stages in the development of control over phonological features, morphological units, and syntactic structures. Techniques for data collection and competence assessment are suggested. (Author/LL)

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Robert E. Rudegeair

ABSTRACT

The linguistic data base prerequisite to the contruction of a battery of tests intended to yield language competence profiles for young children is discussed. Literature bearing on the developmental sequence of phonological features, morphological units, and syntactic structures is reviewed and techniques for data collection and competence assessment are suggested.

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ASSESSMENT OF EARLY CHILDHOOD LANGUAGE PROFICIENCY

Robert E. Rudegeair

This paper briefly surveys the linguistic state-of-the-art relevant to the construction of a battery of tests intended to yield language proficiency profiles of preschool children. A basic assumption in the paper is that language data can be structured consonant with a model that reflects stages in the development of control over phonological features, morphological units, and syntactic structures. To test this assumption a developmental sequence of such features, units, and structures must be specified. The notion of stages will prove useful in proportion to our ability to specify and confirm invariant sequences of emerging features.

The linguistic information necessary to support the construction of the desired test battery has only begun to be collected. At the level of sentence formation, developmental patterns have been investigated for a limited number of syntactic structures. The development of the use of noun and verb inflections has been sketched by Bellugi (1964) and Cazden (1968); negatives by Bloom (1970) and Klima & Bellugi (1966); wh-questions by Brown (1968). Chomsky (1969) studied developmental patterns in the comprehension of infinitive structures. While these investigations tried to trace patterns within a grammatical category, specifying sequential order of acquisition across syntactic categories would seem of equal importance.

The studies mentioned thus far all represent analysis of free speech data collected in a naturalistic setting. In considering

a practical diagnostic assessment battery, collection of free speech samples is precluded. Carefully designed structured elicitation techniques have been tried with apparent success (Anisfeld & Tucker, 1967; Bellamy & Bellamy, 1970; Berko 1958; Fraser, Bellugi, & Brown, 1963; Lovell & Dixon, 1967). It appears possible to devise elicitation techniques for all language features or structures proposed for inclusion in the test battery. Specific techniques will be discussed in the appropriate sections of this paper.

PHONOLOGICAL COMPETENCE

At one level of language processing, the child learns the sound patterns of his native tongue. He learns to recognize and generate speech. Speech is essentially organized sound, and its organization can be described on several levels. The raw output of the speaker or raw input for the hearer is termed phonetic data and is a stream of sound resulting from articulatory configurations generated by a speaker. The structure of phonetic data is the result of chance as well as design. For example, whether or not a speaker of English releases stop consonant closure in sentence-final position is often left to chance. Much of incoming phonetic data is superfluous. A sound segment representative of /s/ might be produced with the tongue positioned behind the lower teeth, the upper teeth or fully away from the teeth on the alveolar ridge; a variety of /s/ manifestations results, but, to receive the message, the speaker need not be sensitive to any differences in the signal caused by these chance configurations.

To receive the message, the listener need only make phonemic decisions. Phonemic decisions relate to whether this sound or that

sound occurred, e.g., did /s/ or /f/ occur. Phonemic decisions are based on extracting only certain features from the speech signal, namely, those relevant in the language at issue. Relevant features vary from language to language and what sound features are relevant for a particular language is an empirical question. The sound features relevant to the sound system of English have been given a great deal of attention in theoretical as well as research reports. Chomsky and Halle (1968) and Jakobson, Fant, and Halle (1967) both address the problems and known processes related to the distinctive features that underlie the structure of English sound patterns. Distinctive features as proposed by Jakobson, Fant, and Halle (1967) are attributes of any phoneme of any language; each phoneme is a unique bundle of features, each feature being specified plus or minus for the phoneme in question. Thus, features are binary oppositions which, theoretically, are justifiable in articulatory, acoustical, and perceptual terms. Jakobson, Fant, and Halle stated twelve such oppositions: Vocalic/Non-Vocalic, Consonantal/Non-Consonantal, Interrupted/Continuant, Checked/Unchecked, Strident/Mellow, Voiced/Voiceless, Compact/Diffuse, Grave/Acute, Flat/Plain, Sharp/Plain, Tense/Lax, and Nasal/Oral. While these twelve binary oppositions theoretically permit the specification of 4096 unique phonemes, the actual number of phonemes employed in any language is very small. In a standard dialect of English, about 40 phonemes occur.

While it is possible to talk about phonemes as a theoretical construct, phonemes do not occur in isolation, but in sequences (syllables, words, etc.). In phoneme sequences, segments are not processed linearly and, under normal conditions, perception of speech is not characterized

by successive phonemic decisions. Phoneme sequences are rule-governed and phonemic context places constraints on segments in the sequence. The redundancy provided by contextual constraints makes linear phonemic decisions inefficient. In addition, influence of higher-level linguistic structures (morphology, syntax, and semantics) adds further constraints, more redundancy and thus, greater predictability about sound patterns as they are processed. Distributional characteristics of individual phonemes and phoneme classes (e.g., consonants) represent phonological data. The rule that only a glide (/w/,/y/) or a liquid (/l/,/r/) can occur between an initial stop consonant and the syllable nucleus (vowel nucleus) of a word is a phonological rule. The constraints imposed on phoneme occurrences by higher level linguistic structures also comprise phonological phenomena. The rule that states that if the word cat is to be pluralized, /s/ and not /z/ must be added to the base form is a phonological rule.

Phonological competence refers to the idealized speaker-hearer's ability to process phonetic material as units relevant in his native language according to a set of phonological rules. It consists of an understanding of the linguistic structure underlying phonetic output. Such understanding can be formalized in sets of rules such as phonotactic rules, morphophonemic rules, phoneme decision rules, and stress shift rules. These rules, their form and application, comprise phonological competence. The acquisition of phonological competence is an important component of language acquisition in general and, in an analytic view, can be juxtaposed to the development of syntactic competence. A profile of phonological compentence can be obtained by studying performance on tasks designed to reflect phonological rule acquisition.

PHONEME DECISION RULES

Models purported to describe the child's acquisition of phonological competence have been offered by Crocker (1969) and Menyuk (1968). Since neither of the proposed models encompasses syllable structure rule acquisition, they might be more appropriately called models of the acquisition of phonemic decision processes. Both the Crocker and the Menyuk models involve the distinctive feature system of Jakobson, Fant, and Halle, and both are constructed on the basis of articulation data. While the ability to articulate the sounds of speech represents an indication of the child's control over surface features of his language, it is ambiguous as an index of competence. A misarticulation may or may not signal poorly developed phonemic decision processes. However, errorless articulation behavior suggests fully developed phonemic decision mechanisms if the popular notion that perception precedes production is valid. That related perception-production skills are respective stages in a hierarchy of skill development has been proposed by Gibson (1969) and, in the case of speech sound discrimination and production, has received some empirical support (Blank, 1968; Menyuk and Anderson, 1969).

Because of the ambiguity of misarticulation data, a model of phonemic decision competence must account for speech sound perception behavior as well as normal articulation development. Auditory perceptual processing of sound features essential to phonological competence has been studied most often in the context of speech sound discrimination tasks. As an experimental technique, such tasks have proved to be a valuable means of establishing a partial data base related to normal development

of sound feature recognition. Recent studies aimed at assessing performance on specific sound constrasts have produced strikingly similar results (Abbs & Minifie, 1969; Marsh & Sherman, 1971; Rudegeair & Kamil, 1970; Rudegeair, 1970; Tikofsky & McInish, 1968).

Children's utterances typically exhibit a greater range of allophonic free variation than adult speech. This has led many observers to describe the childs emerging phonological system as a progression from gross phoneme categories to finer and finer distinctions within those categories (Braine, 1971; Crocker, 1969; Menyuk, 1968). According to this view, the first major categories to emerge in a developing phonemic system are consonant and vowel. These two categories represent two possible combinations of the distinctive features consonantal and vocalic:

+consonantal -vocalic /p,t,k etc./	-consonantal +vocalic /i,u,a etc./

Theories of subsequent development have been stated in such general terms that, at present, a developmental model from which distinct stages might be hypothesized is not available.

PHONOTACTIC RULES

Another aspect of phonological competence that may serve as a useful index of development is the acquisition of phonotactic rules. Phonotactics refers to restrictions imposed on individual phoneme occurrence as well as co-occurrence relations between phones in sequence. For example, English allows the initial clusters /pl/, /bl/, /kl/, /gl/, but not */tl/,

*/dl/; English monosyllables or final syllables never end with the vowels /ɪ/,/ɛ/, or /ʊ/. These examples illustrate phonotactic phenomena that are idiosyncratic to English. They represent constraints that are imposed strictly by convention. Other phonotactic rules may be the result of the natural limitations of short-term memory or the vocal mechanisims. For example in a language like English, no twenty-syllable words occur; nor are there any initial consonant clusters consisting of five stop sounds.

In any case, it is clear that phonotactic rules can be written and it is known that speakers operate under the constraints imposed by such rules. The acquisition of phonotactic rules has not been the subject of much research. Child language data reveal that much phonotactic learning has already occurred by the time the child produces one-word utterances. A perusal of the same data reveals that the phonotactic rules that characterize adult speech are violated all through the developmental period and even into the elementary school years. Whether these violations reflect a variant phonotactic system or are caused by problems at the periphery (speech and hearing) is, in many cases, problematic. No model of the acquisition of English phonotactic patterns has been proposed. But a model of phonological competence must clearly encompass this aspect.

Other than the speech data collected from children in diverse speech tasks, studies of children's ability to observe adult phonotactic patterns have been restricted in scope. Two known studies have investigated the child's propensity for perceiving spoken monosyllables in terms of English phonotactic rules. Messer (1967) showed that children as young as three

years old have internalized the rules governing phone sequences in English monosyllables, although in varying degrees of completeness. In a similar attempt to assess the child's acquisition of sequential rules for phonemes, Rudegeair (1969) showed that six-year-olds were perceptually disposed to hear in terms of "possible" initial English consonant clusters. All twenty Ss in his sample showed an overwhelming tendency to interpret the stimuli according to the rules.

Messer's study is interesting in two respects. First, it shows a perceptual bias in three-year-olds that appears to result from having learned rules that govern phonotactic patterns. Secondly, the study shows that at age three and older, children are still in a developmental period with regard to phonotactic learning. Thus, if a developmental period can be hypothesized, given adequate information on the nature and complexity of phonotactic rules, it can serve as a basis for generating assessment tests in this area. Both the Rudegeair and Messer studies suggest feasible techniques for assessing perceptual behavior pertinent to inferences about phonotactic competence.

SYNTACTIC COMPETENCE

WORD FORMATION

The development of syntactic control involves both word and sentence formation. Word formation involves derivational as well as inflectional morphemes. Little attention has been given in developmental literature to derivational morphemes. One Russian study mentioned by Slobin (1967) was a suffix comprehension test developed by Bogoyavlenskiy (1957). Children five to six years old were tested for their ability to

understand diminutive, augmentive, and agentive suffixes. Subjects had no difficulty in determining the semantic contrasts signaled by suffixed and unsuffixed nonsense syllables. Queried further, no child was able to make a formal analysis of the test words.

In one other study involving derivational suffixes, Robinson (1967) investigated the development of the ability of English speakers to generate suffixed words given the base and vice versa. Her study included Ss from grades three, six and nine as well as adults. Subjects were not only scored for expansion or truncation operations, but also for their ability to pronounce the words so formed with the correct syllable stress. The results indicated regular developmental progressions in the abilities measured: 1) the ability to give base forms in response to presented suffixed forms increased faster than the converse; 2) the ability to handle stress-conditioning suffixes came much later than the ability to add appropriate neutral suffixes (i.e., non stress-conditioning suffixes). Robinson observed that Ss were already using derivational suffixes by grade three, although occurrences in her sample were mostly neutral suffixes (e.g., -ment, -ness, and -ing).

Clearly these studies give us little to go on. But since rules can be constructed to account for meaning and stress shifts due to derivational morphemes, we assume that the child's competence will encompass this area of the grammar. Developmental trends in the acquisition of control over derivational morphology are clearly observable. Since the area is virtually untouched, it is difficult to project what form such observations might take or what their value will be in the context of a skills test battery.

Inflectional morphology represents a more productive aspect of the grammar of English, and consequently, has been given a more thorough treatment in assessment research. The classic study by Berko (1958) showed that it was possible to obtain a measure of competence through the use of nonsense syllables. Her study showed that children as young as five did have regular systematic rules for this component of syntax, even though these rules did not always conform to the adult model. Berko investigated control of five types of inflectional rules, viz., those governing the formation of the possessives and plurals of nouns and the past tense, progressive aspect, and the third person singular of the present tense of the verb. The only other inflectional formation employed in English is the case system for pronouns.

Anisfeld and Tucker (1967) criticized the Berko study on four counts: 1) her test did not evaluate the receptive aspect of morphological development (comprehension); 2) her technique did not examine the child's ability to form the singular given the plural (back formation); 3) her test contained an unequal distribution of the allomorphs tested, precluding all possible error comparisons; 4) her phrasing of the question posed the child provided both morphological and other syntactic constraints which determined the response. In a series of three experiments involving six-year-old children, these investigators attempted to correct the deficiencies noted and thus offer a more precise picture of the development of inflection formation. They restricted their experiments to the productive and receptive control of pluralization rules. On the basis of their data, they were able to add the following kinds of information to our understanding of morphologic development:

a) Even before a child has fully mastered the specific plural suffixes of English, he possesses a general rule to mark the plural by adding onto the singular code.

b) With respect to productive control, there were significantly more errors with /ɪz/ than with either /s/ or /z/, and there was no difference between the number of errors with /s/ and /z/.

c) In the recognition data, more errors occurred with /s/ and /ɪz/ than with /z/. This error distribution was obtained in two different recognition tasks and can be explained in terms of the frequency of occurrence in the language of the phonological combinations involved.

d) Level of difficulty does not differentiate recognition tasks from production tasks, only the pattern of errors does.

e) Children in this age group performed better when they were given the plural and required to produce the singular than when the task was reversed.

Bellamy and Bellamy (1970) criticized the earlier studies for failing to evaluate the acquisition of morphological inflections beyond age six. Furthermore, they wanted to assess comprehension and production skills for all the allomorphs originally studied by Berko. Thus, these investigators reevaluated both comprehension and production of all morphological inflections except pronominal forms by children four to ten years of age. A Chi Square test was used to determine the tasks in which performance was significantly better than chance at the .05 level, the group (defined by grade level) was said to have mastered that task. Table 1 is a display of the results obtained by Bellamy and Bellamy indicating which groups showed mastery of which tasks.

While the Bellamy and Bellamy results provide a rough picture of certain developmental trends, the authors themselves freely discuss dubious conclusions that follow from a strict interpretation of the

TABLE 1

MASTERY/NON-MASTERY DATA FROM MEASURES OF COMPREHENSION AND PRODUCTION OF MORPHOLOGICAL INFLECTIONS BY CHILDREN FOUR TO TEN (BELLAMY & BELLAMY 1970).

		Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade
Comprehension: Picture Choice						
Singular		x	x	x	x	x
Plural				x	x	x
Present		x	x	x	x	x
Past						
Comprehension: Word Choice						
Singular				x	x	x
Plural		x	x	x	x	x
Present						x
Past					x	x
Production : Forward Formation						
Singular to Plural	/s/	x	x	x	x	x
	/z/	x	x	x	x	x
	/ɪz/					
Singular to Possessive Singular	/s/	x			x	x
	/z/	x			x	x
	/ɪz/					
Plural to Possessive Plural	/s/	x	x	x	x	x
	/z/	x	x	x	x	x
	/ɪz/	x		x	x	x
Infinitive to Present	/s/	x		x	x	x
	/z/	x		x	x	x
	/ɪz/					
Infinitive to Past	/s/					x
	/z/					x
	/ɪz/					
Infinitive to Progressive	/s/			x	x	x
	/z/			x	x	x
	/ɪz/				x	x
Production: Back Formation						
Plural to Singular	/s/			x	x	x
	/z/		x	x	x	x
	/ɪz/			x	x	x
Possessive Plural to Possessive Singular	/s/					
	/z/					
	/ɪz/					
Possessive Plural to Plural	/s/	x	x	x	x	x
	/z/	x	x	x	x	x
	/ɪz/	x	x	x	x	x
Past to Present	/ɪd-s/			x	x	x
	/d-z/			x	x	x
	/t-ɪz/					
Past to Infinitive	/d/	x		x	x	x
	/t/			x	x	x
	/ɪd/			x	x	x
Past to Progressive	/d/				x	x
	/t/				x	x
	/ɪd/			x	x	x

data in the table. For example, no group showed mastery on the comprehension task requiring the choice of a picture to fit a supplied past tense form. The authors suggest that the lack of mastery on this task could be influenced by the difficulty in depicting past actions with pictures. Even so the relatively late age for mastery of comprehension tasks in general is surprising. It is perhaps wise to consider the data at issue as a conservative measure of mastery levels; at the same time, the value of the study with respect to the order of emergence of control over specific morphological elements should prove helpful.

SENTENCE FORMATION

Preliminary to assessing growth of abilities on the level of syntax, it is necessary to decide what constitute meaningful indices of syntactic control. Traditionally, dependent measures have been gross aspects of sentence structure or sentence content. Templin (1957), in her analysis of children's verbalizations, uses as one measure the McCarthy-Davis sentence construction categories. Six major categories were used: (1) functionally complete but structurally incomplete; (2) simple without phrase; (3) simple with phrase; (4) compound and complex; (5) elaborated; (6) incomplete. Other investigations have focused on such measures as utterance length, determined by the number of words or morphemes in the utterance; structural complexity, determined by the occurrence of specific constructions in the utterance; and parts of speech, which was simply a tally of the frequency of occurrence of the various parts of speech. From such gross measures, only gross conclusions were possible. Templin's (1957) summary of the research based on these kinds of analyses reveals the following kinds of conclusions:

1) As children become older their utterances become longer.

2) As children become older they exhibit fewer incomplete utterances.

3) As children become older they exhibit a more frequent use of subordination processes.

4) As children become older their complete utterances conform more and more to the adult model of syntanx.

Since the explication of the theory of transformational grammar, transformational taxonomy has been adopted for the analysis of children's utterances. The new taxonomy allows a more detailed analysis of each utterance as well as a more systematic framework of sentence classification. Such advances can only serve to facilitate the search for developmental sequences in the acquisition of syntax. Table 2 presents the list of transformational sentence classes employed in a series of studies by Menyuk (1963, 1964a, 1964b). These are presented by way of example and are not definitive. A thorough review of studies employing this and alternate lists derived from the transformational approach is presented by Hatch (1969).

In most cases, as was noted earlier, child utterances are collected in the context of spontaneous speech such as naturalistic observation or elicited story-telling. But in those cases where some structured elicitation technicques are employed, means of observing control of specific structures must be devised. Fraser et al (1963) exploited certain natural grammatical contrasts and devised procedures for having children produce or perceive the resulting discriminations. Their list of contrasts, with examples, is presented in table 3 and offers another example of how meaningful indices can be constructed.

TABLE 2

List of transformational sentence classes employed by Menyuk (1963, 1964a, 1964b)

1. Passive (He was tied up by the man.)
2. Negation (I am not.)
3. Question (Is he sleeping?)
4. Contraction (He'll choke.)
5. Inversion (Now I have kittens.)
6. Relative question (What is that?)
7. Imperative (Don't use my brushes.)
8. Pronominalization (There isn't any more.)
9. Separation (He took it off.)
10. Got (I've got a book.)
11. Auxiliary verb
    a. be (He is not going to the movies.)
    b. have (I've already been there.)
12. Do (I did read a book.)
13. Possessive (I'm writing daddy's name.)
14. Reflexive (I cut myself.)
15. Conjunction (They will be over here and mommy will be over there.)
16. Conjunction deletion (I see lipstick and a comb.)
17. Conditional (I'll give it to you if you need it.)
18. So (He saw him so he hit him.)
19. Causal (He won't eat the grass because they will cry.)
20. Pronoun in conjunction (Blacky saw Tippy and he was mad.)
21. Adjective (I have a pink dog.)
22. Relative clause (I don't know what he's doing.)
23. Complement
    a. infinitival (I want to play.)
    b. participial (I like singing.)
24. Iteration (You have to clean clothes to make them clean.)
25. Nominalization (She does the shopping and cooking and baking.)
26. Nominal compound (The baby carriage is here.)

(Menyuk, 1963, 410-411)

TABLE 3

List of grammatical contrasts employed in elicitation procedures devised by Fraser et al (1963)

1. Mass noun/Count noun: Some mog/A dap.
   Some pim/A ked.

2. Singular/Plural, marked by inflections:
   The boy draws/The boys draw.
   The kitten plays/The kittens play.

3. Singular/Plural, marked by is and are:
   The deer is running/The deer are running.
   The sheep is eating/The sheep are eating.

4. Present progressive tense/Past tense:
   The paint is spilling/The paint spilled.
   The boy is jumping/The boy jumped.

5. Present progressive tense/Future tense:
   The girl is drinking/The girl will drink.
   The baby is climbing/The baby will climb.

6. Affirmative/Negative: The girl is cooking/The girl is not cooking.
   The boy is sitting/The boy is not sitting.

7. Singular/Plural, of 3rd-person possessive pronouns:
   His wagon/Their wagon.
   Her dog/Their dog.

8. Subject/Object, in the active voice:
   The train bumps the car/The car bumps the train.
   The mommy kisses the daddy/The daddy kisses the mommy.

9. Subject/Object, in the passive voice:
   The car is bumped by the train/The train is bumped by the car.
   The daddy is kissed by the mommy/The mommy is kissed by the daddy.

10. Indirect object/Direct object:
    The girl shows the cat the dog/The girl shows the dog the cat.
    The boy brings the fish the bird/The boy brings the bird the fish.

There are two ways to approach the assessment of the child's syntactic proficiency. Measures can be obtained for comprehension or production. Since we are interested in linguistic competence, it can be argued that measures of comprehension are more appropriate. This follows from the generally accepted notion that comprehension abilities are more advanced than production abilities. That is to say, a child may comprehend a structure that he himself does not produce. At the same time, however, it must be noted that comprehension tests present a greater methodological problem than production measures. Hence, measures of production may be a more realiable index of syntactic control in certain areas than the corresponding measures of comprehension. Both types of measure would seem essential if a meaningful profile is to result.

Production tests can vary from simple repetition on the perceptual-motor level, on the one extreme, to purely spontaneous utterance on the other. Since the perceptual motor task does not involve the child's language processing system, this type of task cannot serve the intended purposes of a diagnostic test. On the other hand, spontaneous speech collection involves so much time and effort that it is obviously impractical as a diagnostic technique. Besides, the child may have control over syntactic features that he simply doesn't get around to exhibiting. In between these two extremes a variety of elicitation techniques are available as practical means of assessing syntactic control. Two of these have been used in several experiments and appear worthy of confidence as assessment instruments. One is sentence imitation where

the language processing system is involved and the other is the controlled stimulation of spoken descriptions of pictured events.

Fraser et al. (1963) administered tests of imitation, comprehension, and production on ten grammatical contrasts. In discussing their results they concluded that "imitation is a perceptual-motor skill that does not work through the meaning system..." (p. 133). If we accept the limited evidence they cite in support of this argument, we can only conclude that their particular imitation task failed to input to the "meaning" system. There is evidence available from several studies that suggests sentence imitation can serve as a viable instrument for assessing grammatical control (Hatch, 1970; Menyuk, 1963; Slobin & Welsh, 1968).

Slobin and Welsh (1968) discuss data from structured imitation sessions with "Echo" when she was 2.3 to 2.5 years old. Evidence that the model sentences involved were processed through her meaning system can be seen in the following examples:

1. E: WE WERE HIDING.
   Echo: We was hiding.

2. E: TOMORROW THERE WILL NOT BE A LONG LINE
   Echo: Won't be a long line.

3. E: THIS ONE IS THE GIANT, BUT THIS ONE IS LITTLE.
   Echo: This one little, and that one big.

This is not to argue that all sentences offered to children for repetition are automatically processed through the individual language system. Given short & simple sentences, the repetition task may indeed be no more than a perceptual-motor task, as Fraser et al. concluded was the case in their experiment. Success of the technique lies in

presenting Ss sentences which go beyond their processing span. In doing so there is more information to be gained from omissions and reformulations than from successful repetition. Slobin and Welsh's subject demonstrated control over certain transformational operations in several instances. Consider the following examples:

4. E: THE CANDY IS MARPLE. THE SHOE IS MARPLE.
   Echo: ...shoe marple and a candy marple.

5. E: THE OWL EATS CANDY AND THE OWL RUNS FAST.
   Echo: Owl eat candy and he runs fast.

In (4) Echo demonstrates her control of the conjoining transformation, offering it in spite of its absence from the model. It is significant that the meaning of the sentence remains unaltered with the addition of and. The same sentence shows Echo's tendency to delete the copula as well as her lack of understanding with respect to the selection restriction governing mass nouns. In (5) her control over the pronominalization transformation is attested to, as well as her lack of control over the third person singular verb inflection. Examples such as these give some indication of the payoff offered by the imitation technique when properly controlled. In the report of the study involving Echo, Slobin and Welsh conclude: "A fine-grained analysis of repeated imitations of systematically varied model sentences can reveal aspects of the child's theory of syntax, including transformational rules and the syntactic and semantic markers borne by lexical items." (p.18).

The data from Menyuk (1963) and Hatch (1970) add credence to Slobin's and Welsh's conclusion. Even so, what form "systematically

varied model sentence" might take is an open question. The surface has been barely scratched in defining the shape model sentences might take for specific purposes and at specific levels of development. While the Slobin and Welsh study points the way and offers some interesting generalizations, it only serves to show the power of a virtually unexplored technique.

Of additional significance to the design of a comprehensive assessment instrument, is the discovery that the imitation technique also offers information relevant to the child's comprehension abilities. McNeill (1970), in discussing the Slobin and Welsh's study of Echo, focuses on the following examples (p. 14).

6. E: HERE IS A BROWN BRUSH AND HERE IS A COMB.
   Echo: Here's a brown brush and a comb.

7. E: JOHN WHO CRIED CAME TO MY PARTY.
   Echo: John cried and he came to my party.

8. E: THE BATMAN GOT BURNED AND THE BIG SHOE IS THERE.
   Echo: Big shoe is here and big shoe is here.

9. E: THE BOY THE BOOK HIT WAS CRYING.
   Echo: Boy the book was crying.

According to McNeill, (6) and (7) demonstrate Echo's comprehension of grammatical forms she cannot produce, while (8) and (9) indicate an inability to comprehend. McNeill concludes: "Slobin and Welsh's method deserves exploration, for it appears to have the virtues of generality and naturalness that the other methods for testing comprehension lack." (p.14).

A second technique for measuring production performance is available in the form of picture-cued utterances. Fraser et al. (1963) sought to

compare imitation, comprehension, and production. Thus, some measure of production had to be found that contrasted with imitation. Again, free spontaneous conversation was ruled out because it does not lend itself to experiments involving grammatical features that are specified a priori. The investigators devised an elicitation technique in which pictures that exemplified grammatical contrasts were employed. For example, two pictures were, in effect, named "The sheep is jumping." and "The sheep are jumping." The child, when being tested, was told the "names" of the pictures; subsequently, E would point to one or the other picture and ask: "What is the name of this picture?"

Fraser et al. conducted their experiment with 3-year-olds. Lovell and Dixon (1965) more or less replicated the experiment with 2-year-olds. McNeill (1970) claims that this particular production test was successful, (p. 12), but it is not clear what success means in this case. To conclude that the technique offers an accurate reflection of the child's linguistic competence would be presumptuous, but not necessarily false. The test has certain apparent shortcomings. Besides a necessary correction for guessing, the technique is limited to grammatical contrasts that can be pictured. While it is too soon to dismiss picture-cuing procedures out of hand, too little investigative work with the technique has been conducted to insure its practicality as a diagnostic tool.

The literature contains few reports of studies investigating tests (other than imitation tests) of the child's ability to produce specific syntactic forms. Virtually no studies have been conducted in the context of laying the groundwork for a comprehensive battery of production

skill tests. Hence, any effort in that direction must be viewed as pioneering, and some efforts to validate elicitation techniques must be anticipated.

Most studies related to mastery of specific syntactic forms fall into the general category of tests of comprehension. That tests of comprehension are necessary for an accurate language ability profile can be asserted on two counts: Firstly, even though productions can be observed directly, it is not always clear that the absence of a feature in the child's utterances correlates fully with a deficit in his linguistic competence. Surface structure features may be censored out by the child for a variety of extra-linguistic reasons, for example, to compensate for an abbreviated memory span (McNeill, 1970). Secondly, it is generally agreed that comprehension ability functions in advance of production ability (Brown & Hanlon, 1968; Chomsky, 1964; Fraser, Brown & Bellugi, 1964; Lovell & Dixon, 1965; Shipley et al. 1969). If this is the case, and there is strong evidence for such a position, then production data offer a conservative, hence imprecise, picture of the child's true competence. Comprehension measures are needed to finely tune the picture of competence sought.

We have already seen that structured imitation tasks can yield some information about comprehension of grammatical forms. Whether or not the imitation technique can be used to systematically assess the comprehension of predetermined grammatical forms remains to be seen. It is apparent that the imitation procedure, if it can be sufficiently developed, would be extremely practical in the construction of a test

battery aimed at measuring the skills of a large number of Ss in a relatively short period of time. In addition, the imitation procedure does not suffer from the shortcomings of the typical comprehension technique used with preschool Ss, those involving graphically portrayable events.

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